

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 1.28**WELDING INSPECTION REPORT****Resident Engineer:**Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-013056**Date Inspected:** 17-Apr-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1400**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site**CWI Name:** See Below**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** Orthotropic Box Girders**Summary of Items Observed:**

At the start of the shift the Quality Assurance Inspector (QAI) traveled to the project site and observed the following work performed by American Bridge/Fluor Enterprises (AB/F) personnel at the locations noted below:

- A). Machining of the Field Splice W1/W2
- B). Welding of the Field Splice W2/W3
- C). Welding of the Backing Bar at Field Splice W3/W4
- D). Repairs at the Field Splice E1/E2
- E.) QC/UT of the Field Splice E2/E3
- F). Welding of the Field Splice E3/E4

A) Field Splice W1/W2, WN: 1W-2W-A

The QAI observed the machining of the Complete Joint Penetration groove cover pass. The AB/F personnel utilized high cycle grinders to perform the machine the cover pass. It appears the machining of the weld surface is performed to prepare the weld joint regarding inspection and N.D.E.

B) Field Splice W2/W3, WN: 2W-3W-D

The QAI observed the Submerged Arc Welding (SAW) of the bottom plate field splice identified as Weld Number (WN): 2W-3W-D. The welding was performed by the welding operator Jordan Hazelaar ID-2125 utilizing the Welding Procedure Specification (WPS) ABF-WPS-D15-4042B-1 Rev. 0. The WPS was also used by the AB/F

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Quality Control (QC) Inspector Bernie Docena as a reference to perform the monitoring of the Direct Current Electrode Positive (DCEP) welding parameters during the Complete Joint Penetration (CJP) groove welding of the deck plate field splice. Later in the shift the QAI observed the QC inspector monitoring the welding parameters and were noted as follows: 577 amps, 32.9 volts and a travel speed measured at 420 mm/minute. The QC inspector also monitored the surface temperatures during the field welding and the following was observed and noted by the QAI: the minimum preheat temperature of 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius.

C) Welding of Backing Bar at Field Splice W3/W4, WN: 3W-4E-D

The QAI also observed the continuous tack welding of the backing bar to the bottom plate identified as WN: 3W-4W-D. The welding was performed by James Zhen ID-6001 and Chun Fai Tsui ID-3426 utilizing the WPS identified as ABF-WPS-D15-F1200A Rev. 1 which was also used by the QC inspector, Bernie Docena, to monitor the in process welding and verify the welding parameters. The welding parameters were verified and recorded by the QAI as follows: 170 amps for the welder Mr. Tsui and 166 amps for the welder Mr. Zhen. The minimum and maximum surface temperatures were also verified and recorded by the QAI.

D) Repairs at the Field Splice E1/E2, WN: 1E-2E-C

The QAI observed the excavation of the unacceptable discontinuities discovered during the Ultrasonic Testing (UT) performed by the QC Technician, Jesse Cayabyab. The excavations were performed by welding personnel Rick Clayborn ID-2773 utilizing a high cycle grinder to remove the defects. At the conclusion of the excavations the QC inspector, Bonifacio Daquinag, performed a visual inspection and a Magnetic Particle Test of the areas. No rejectable indications were noted by the QC inspector and Mr. Clayborn commence the welding of the excavations utilizing the WPS identified as ABF-WPS-D15-1000-Repair Rev. 2. The QAI verified the DCEP welding parameters as 132 amps and the minimum preheat 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. Later in the shift the QAI observed at random intervals the QC inspector monitoring and verifying the welding parameters.

E) QC/UT of the Field Splice E2/E3, WN: 2E-3E-C

The QAI also observed continued the Ultrasonic Testing (UT) of the transverse CJP weld and the repairs of the deck plate field splice identified as WN: 2E-3E-C. The testing was performed by the QC technician Steve McConnell utilizing a Krautkramer USM 35. Mr. McConnell also utilized the UT Procedure identified as SE-UT-D1.5-CT-100 Rev.4 during the examination of the CJP. The QC technician performed the required longitudinal wave utilizing a 1" diameter transducer for base metal soundness and a .75 x .75 rectangular transducer to perform the shear wave testing during the testing for weld soundness. There was one (1) UT reject noted by Mr. McConnell.

F) Welding of the Field Splice E3/E4, WN: 3E-4E-C

The QAI observed the Flux Cored Arc Welding (FCAW-G) of the CJP joint identified as Weld Number (WN) 3E-4E-C. The welding was performed by American Bridge/Fluor Enterprise personnel Song Tao Huang, ID-3794. The QAI also verified the Direct Current Electrode Positive (DCEP) welding parameters which were noted as

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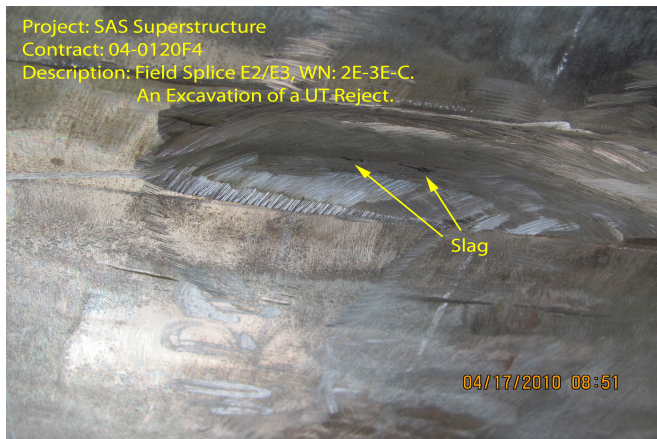
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follows: 246 amps, 24 volts and a travel speed measured as 250mm per minute. The QAI also verified the minimum preheat temperature of 65 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius.

QA Observation and Verification Summary

The QA inspector observed the QC activities and the welding of the field splices utilizing the WPS as noted above, which appeared to be posted at the weld station. The welding parameters and surface temperatures were verified by the QC inspector's and utilizing a Fluke 337 clamp meter for the electrical welding parameters and a Fluke 63 IR Thermometer for verifying the preheat and interpass temperatures. The ESAB consumables utilized for the SMAW, SAW and the FCAW-G processes appeared to comply with the AWS Specification and AWS Classification. The QC inspection, testing and welding performed on this shift was not completed, except as noted, appeared to be in general compliance with the contract documents. At random intervals, the QAI verified the QC inspection, testing, welding parameters and the surface temperatures utilizing various inspection equipment and gages which included a Fluke 337 Clamp Meter and Tempilstik Temperature indicators.

The digital photographs, below, illustrate the work observed during this scheduled shift.



Summary of Conversations:

There were no pertinent conversations discussed in regards to the project except as noted above.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mohammad Fatemi (916) 813-3677, who represents the Office of Structural Materials for your project.

Inspected By:	Reyes,Danny	Quality Assurance Inspector
Reviewed By:	Levell,Bill	QA Reviewer
